

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of the claims in this application.

Listing of Claims:

1-9. (Cancelled)

10. (Currently Amended) A method of imaging a subject comprising ~~the steps of~~  
administering ~~into a~~ to the subject a paramagnetic CEST agent comprising,  
a substrate molecule (SH) ~~endowed with~~ comprising at least one mobile proton in  
exchange with bulk water bound by ~~means of~~ electrostatic interactions having a thermodynamic  
constant of association  $K_a$  greater than 10 to a paramagnetic chelate complex (SR) of a metal ion  
selected from the group consisting of: iron (II) (high-spin configuration), iron (III), cobalt (II),  
rhodium (II), copper (II), nickel (II), cerium (III), praseodymium (III), neodymium (III),  
dysprosium (III), erbium (III), terbium (III), holmium (III), thulium (III), ytterbium (III) and  
europium (III);

applying an rf pulse sufficient to saturate the resonance of the at least one mobile proton  
shifted from the bulk water as a result of said electrostatic interaction to create a saturated  
magnetization that is transferred to the bulk water through chemical exchange, and  
imaging ~~said~~ the subject using a CEST-based MRI procedure.

11. (Previously Presented) The method of claim 10 wherein the substrate molecule  
(SH) is diamagnetic and is selected from linear and cyclic polyamines, polyaminoacids, proteins,  
polysaccharides, polyamidoamine, peramidated polyaminoacids, dendrimers containing amide  
groups, polycyclodextrins, polysaccharides and alginates.

12. (Previously Presented) The method of claim 11 wherein the substrate is selected  
from polyarginine, albumin and cyclen.

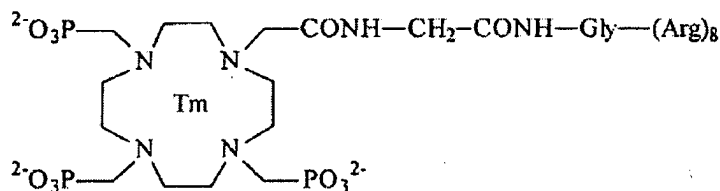
13. (Previously Presented) The method of claims 10 in which the paramagnetic chelate is  $[\text{LnDOTP}]^{4-}$  and the Ln metal ion is selected from the following: Ce(III), Pr(III), Nd(III), Eu(III), Tb(III), Dy(III), Ho(III), Er(III), Tm(III), Yb(III).

14. (Currently Amended) The method of claims 10 wherein the substrate molecule (SH) and the paramagnetic chelate complex (SR) are ~~compartmentalized~~ contained within the same compartment in biocompatible systems selected from the group consisting of liposomes, nanoparticles, microemulsions and protein cavities.

15-17. (Cancelled)

18. (Withdrawn) A paramagnetic CEST agent comprising a substrate molecule (SH) endowed with at least one mobile proton in exchange with bulk water bound to a  $[\text{LnDOTP}]^{4-}$  as paramagnetic chelate complex (SR).

19. (Withdrawn) A paramagnetic CEST agent of formula:



20-21. (Cancelled)

22. (Withdrawn) The paramagnetic CEST agent of claim 18 wherein the substrate molecule SH is bound to the chelate complex by means of electrostatic interactions having a thermodynamic constant of association  $K_a$  greater than 10.

23. (Withdrawn) The paramagnetic CEST agent of claim 18 wherein the substrate molecule (SH) is selected from linear and cyclic polyamines, polyaminoacids, proteins, polysaccharides, polyamidoamine, permidated polyaminoacids, dendrimers containing amide groups, polycyclodextrins, polysaccharides and alginates.

24. (Withdrawn) A paramagnetic CEST agent comprising a paramagnetic chelate complex (SR) of a metal ion selected from iron (II) (high-spin configuration), iron (III), cobalt (II), rhodium (II), copper (II), nickel (II), cerium (III), praseodymium (III), neodymium (III), dysprosium (III), erbium (III), terbium (III), holmium (III), thulium (III), ytterbium (III) and europium (III), bound to a substrate molecule (SH) endowed with at least one mobile proton, wherein the said SR and SH are compartmentalized in a biocompatible system selected from liposomes, nanoparticles, microemulsions and protein cavities.

25. (Withdrawn) The paramagnetic CEST agent of claim 18 or 24 wherein the exchangeable protons belong to water molecules.

26. (Withdrawn) A paramagnetic CEST agent comprising a paramagnetic chelate complex (SR) and water molecules, whose chemical shift is influenced by the SR unit, trapped in the same compartment and wherein, at the same time, the said water molecule are in exchange conditions with the bulk water.

27. (Withdrawn) A diagnostic composition comprising the agent of anyone of claims 18, 19, 24, 25 or 26 together with a suitable vehicle.

28. (Cancelled)